LCM-16EY

User manual

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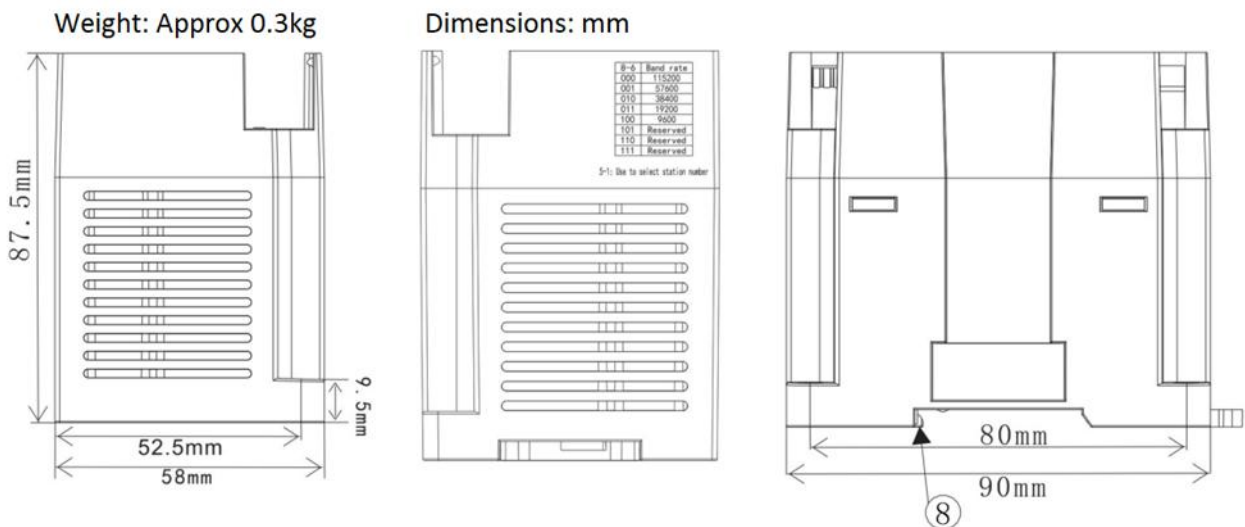**Technical forum:** http://wecon.freeforums.net/

1. Naming rule

Naming rule of LCM I/O output expansion module:

LCM-16EY
① ②③④⑤

① WECON PLC series;
② Input point No.
③ Product type, E means expansion;

④ Expansion output (Y);
⑤ T: transistor, R: relay;

2. Dimensions

Weight: Approx 0.3kg   Dimensions: mm

87.5mm
9.5mm
52.5mm
58mm
80mm
90mm
⑧

① State LED: Light when normal condition
② LINK: RS485 communication state
③ 485 communication terminal
④ Module power DC24V
⑤ Extension module name
⑥ Digital signal output terminal
⑦ DIN rail mounting slot
⑧ DIN rail hook
⑨ Mounting holes (φ4.5)
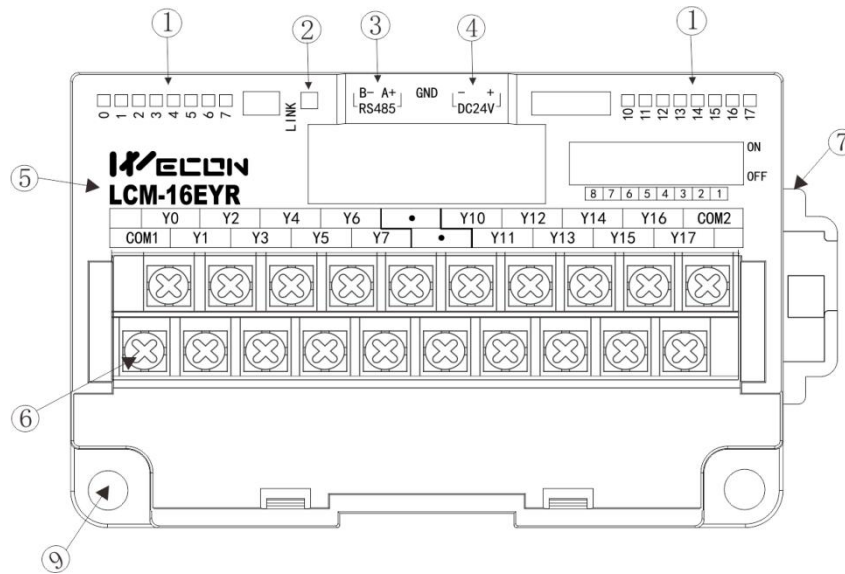
Name	Description	Led states	Event state
LINK	RS485 communication states	Led Blink	Normal communication
		Led OFF	Communication exception, stop, or failure
		Led ON	Abnormal software operation or hardware failure

2.1 Crimp terminations
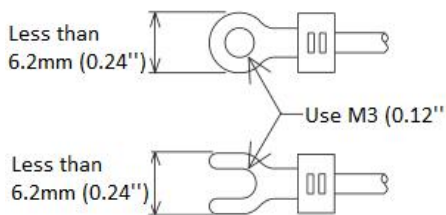
- Please use crimp terminals as indicated on the graph.
- The tightening torque should be applied 5 to 8 Kg.cm.
- Other terminals should be empty but only wiring terminals mention in this manual.

3. Output specification

Item		Relay output	Transistor output
Mode		LCM-16EYR	LCM-16EYT
Output circuit			
Power supply		Less than AC250V or DC 30V	DC 5V~ 30V
Circuit insulation		Mechanical	Photo-coupling
LED		Light when relay is energized	Light when photo-coupling is energized
Load	Resistance	2A/ point 8A/ four points 8A/ eight points	0.5A/ point 0.8A/ four points 1.6A/ eight points
	Inductance	80VA	12W/DC24V
	Lamp	100W	1.5W/DC24V
Leakage current		--	0.1mA/ DC 30V
Minimum load		--	DC 5V 2mA
OFF->ON		About 10 ms	Less than 0.2 ms
ON-> OFF		About 10 ms	Less than 0.2 ms

4. Modbus communication

4.1 Comport communication configuration

Com port comm. configuration	
Station No.	1~32 (Adjust by DIP switch)
Baud rate	9600~115200 (Adjust by DIP switch)
Stop bit	1

Data bit	8
parity	even

4.2 Module communication mode (function code)

LCM-16EY communication with coil: 01 (read coil), 05 (write signal coil), 15 (write continuous coils)

1) 0x01 (Read coil)

Request (by Master)

Slave Station	1 byte	Slave station
Function code	1 byte	0x01
Start address	2 byte	0x0000 to 0x000F
Coil address No.	2 byte	1 to 16
CRC	2 byte	CRC

Response (by slave)

Slave station	1 byte	Slave station
Function code	1 byte	0x01
Byte No.	1 byte	N
Coil states	N byte	n=N or N+1
CRC	2 byte	CRC

N=Output number/8,if remainder is not equal to 0,then N=N+1

Error (Slave respond)

Slave station	1 byte	Slave station
Error code	1 byte	0x81
Exception code	1 byte	01 (can not support this function) 02 (Address crossing domain)
CRC	2 byte	CRC

Example: read 0x0000-0x0007 coils address

Request (by Master)		Respond (By slave)	
Slave	0A	Slave	0A
Function code	01	Function code	01
Coil high start address	00	Byte No.	01
Coil low start address	00	Output states (0-7)	FF
Read number (High 8 bits)	00	CRC Low bit	13

Read number (Low 8 bits)	08	CRC High bit	EC
CRC Low bit	B7		
CRC High bit	3C		

2) 0x05 (Write signal coil)

Request (By Master)

Slave station	1 byte	Slave station
Function code	1 byte	0x05
Output address	2 byte	0x0000 to 0x000F
Output value	2 byte	0x0000 (Write 0) or 0xFF00 (Write 1)
CRC	2 byte	CRC

Respond (By Slave)

Slave station	1 byte	Slave station
Function code	1 byte	0x05
Output address	2 byte	0x0000 to 0x000F
Output value	2 byte	0x0000 or 0xFF00
CRC	2 byte	CRC

Error Respond (By Slave)

Slave station	1 byte	Slave station
Error code	1 byte	0x85
Exception code	1 byte	01 (cannot support this function code) 02 (Address crossing domain)
CRC	2 byte	CRC

Example: write 0x000 address coil

Request (by master)		Respond (by slave)	
Slave Station	0A	Slave station	0A
Function code	05	Function code	05
Coil high start address	00	Coil high start address	00
Coil low start address	00	Coil low start address	00
Write number (High 8 bits)	FF	Write number (High 8 bits)	FF
Write number (Low 8 bits)	00	Write number (Low 8 bits)	00
CRC Low bit	BD		BD
CRC High bit	41		41

3) 0x0F (Write continuous coil)

Request (by Master)

Slave station	1 byte	Slave station
Function code	1 byte	0x0F
Start address	2 byte	0x0000 to 0x000F
Output number	2 byte	1to 16
Byte number	1 byte	N
Output value	N*1 byte	
CRC	2 byte	CRC

N=Output value/8,if remainder is not equal to 0,then N=N+1

Respond (by slave)

Slave station	1 byte	Slave station
Function code	1 byte	0x0F
Start address	2 byte	0x0000 to 0x000F
Output value	2 byte	1 to 16
CRC	2 byte	CRC

Error Respond (By Slave)

Slave station	1 byte	Slave station
Error code	1 byte	0x8F
Exception code	1 byte	01 (cannot support this function code) 02 (Address crossing domain)
CRC	2 byte	CRC

Example: Write 0x0000 address to 0x0007 coil

Master request		Slave respond	
Slave station	0A	Slave station	0A
Function code	0F	Function code	0F
Coil high start address	00	Coil high start address	00
Coil low start address	00	Coil low start address	00
operations number high 8 bit	00	operations number high 8 bit	00
operations number low 8 bit	08	operations number low 8 bit	08
Byte number	01	CRC low bit	55
Write number	88	CRC high bit	76
CRC low bit	40		
CRC high bit	BF		

4.3 Introduction of DIP switch

1) **DIP switch introduction**
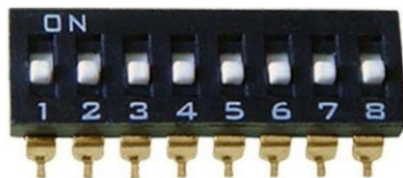
8-6	Baud rate
000	115200
001	57600
010	38400
011	19200
100	9600
101	Reserved
110	Reserved
111	Reserved

5-1: Use to select station number

Figure 4- 1 DIP   switch

Note

In practical use, the dial switch is ON (1) downward and OFF (0) upward. As shown in the figure, the status of the DIP switch is downward, all are ON.

2) **DIP switch and station setting**

In practical use, the # 1 to # 5 of the DIP switch is used for the selection of the module station number, and the relationship between the station number and the 1 # 5 dial number switch is shown in the following table:

#1 DIP switch	#2 DIP switch	#3 DIP switch	#4 DIP switch	#5 DIP switch	Module station
0	0	0	0	0	1
1	0	0	0	0	2
0	1	0	0	0	3
1	1	0	0	0	4
0	0	1	0	0	5
1	0	1	0	0	6
0	1	1	0	0	7
1	1	1	0	0	8
0	0	0	1	0	9
1	0	0	1	0	10
0	1	0	1	0	11

1	1	0	1	0	12
0	0	1	1	0	13
1	0	1	1	0	14
0	1	1	1	0	15
1	1	1	1	0	16
0	0	0	0	1	17
1	0	0	0	1	18
0	1	0	0	1	19
1	1	0	0	1	20
0	0	1	0	1	21
1	0	1	0	1	22
0	1	1	0	1	23
1	1	1	0	1	24
0	0	0	1	1	25
1	0	0	1	1	25
0	1	0	1	1	27
1	1	0	1	1	28
0	0	1	1	1	29
1	0	1	1	1	30
0	1	1	1	1	31
1	1	1	1	1	32

3) **DIP switch and baud rate setting**

In practical use, the #6 to #8 of the DIP switch are used for the selection of the baud rate, and the relationship between the baud rate and #6-# 8 DIP switch is shown in the following table:

| #6 DIP switch	#7 DIP switch	#8 DIP switch	Module baud rate
0	0	0	115200
1	0	0	57600
0	1	0	38400
1	1	0	19200
0	0	1	9600
1	0	1	Reserved for later expansion (Default: 115200)
0	1	1	Reserved for later expansion (Default: 115200)
1	1	1	Reserved for later expansion (Default: 115200)

4.3 Note

Communication function is different between LCM-16EY module and LX3V-16EY module, but register function is same.

Module	Maximum accessible address(BFM address)
16EY	15(output terminal)

5. Example

Set DIP switch according to 4.2 section introduces, the module station is 2, and baud rate is 115200. The 16 input terminal of the LCM-16EY module are mapped to M10~M25.
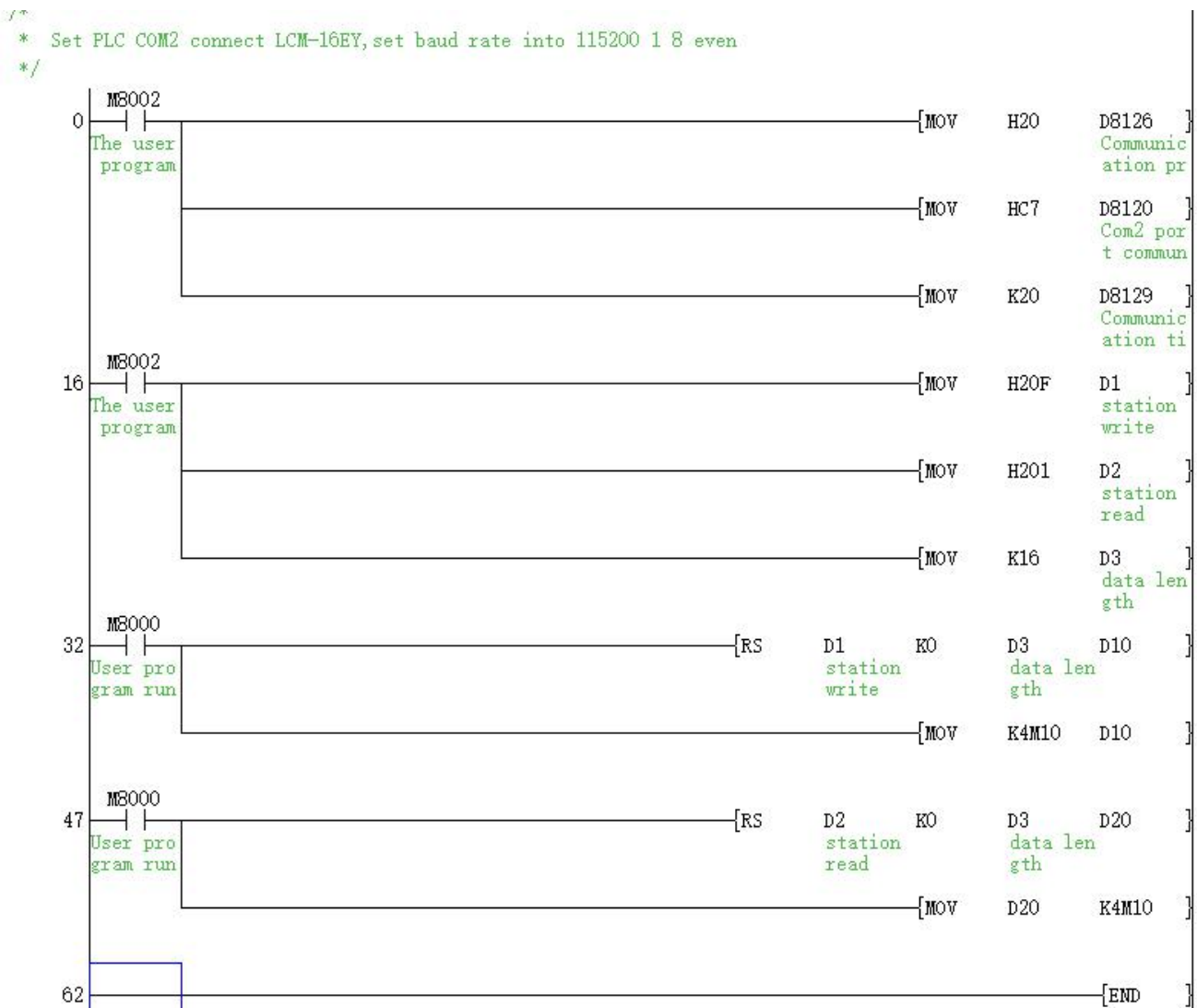
Project explanation

1) Step 0~16: This is for setting communication protocol and communication parameters;
   - Set PLC com2 as Modbus Master;
   - Set stop bit =1, data bit=8, Even parity, baud rate=115200 (Please check detail in PLC COM2 Modbus setting manual)
2) Step 16~47: 16 input terminal of the LCM-16EY module are mapped to M10~M25

Version: V1.1.0

Date: June 2019